SLEEP MOVEMENTS OF EPILEPSY.[1]

BY J. W. PUTNAM., M.D.,

Buffalo, N. Y.

IN our attempts at localizing the seat of irritation in the brain in cases of epilepsy, we have for data the history of former head injury, of which we sometimes find proof in adherent scars in the scalp, sometimes there is a distinct depression in the skull.

When we have no history of cranial injury, we often get a history of the character of the attacks, and upon this history of the aura and the muscles first convulsed we rely for our localization.

Owing to the nature of the disease we are obliged to rely in most cases upon the observation of others.

In the experience of many, it has been difficult to obtain clear and positive statements as to the manner of beginning of an attack. Often the patient is unobserved, and when observed it frequently happens that those about him are too much excited or too ignorant to make trustworthy observation. Last fall it was my fortune to have a patient who was at that time having a convulsion almost every night at about ten o'clock.

While waiting to observe an attack, I noticed that the patient was restlessly tossing her left arm while the right was quiet. The movement was different from the ordinary purposeless movements of restless sleep. It was a slow raising of the arm from the chest or side up over the head where it would remain for a moment and then slide down the pillow. This occurred several times, no movement of the legs was observed. That night she had no convulsion, but I was informed by the mother that on other nights she always turned over on her left side during a convulsion.

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[1] Read at the meeting of the American Neurological Association, New York, June 22, 23, 24, 1892.

From the observation of this movement of the left arm, during sleep, it occurred to me that a series of observations of epileptics during sleep might show similar movements, which might be of localizing value.

In all epileptic cases careful inquiry was made as to how the patient slept, and what position was naturally taken. Directions were given that the patient be watched for several nights, and a report made as to whether the sleep was quiet or not. If he were restless, directions were given to notice which limbs were moved the most and how.

As a result of such directions some interesting facts were learned.

A medical student who had been epileptic for about three years, and who had convulsions at intervals of from four to eight weeks, was observed by a fellow-student who slept with him. He reported that as far as he could judge, he was ordinarily a quiet sleeper, but that when he was restless he either tossed the left arm or moved the right leg. He did not think that the right side was restless.

A patient of Dr. Park's, a child of five years, on whom he performed linear crainotomy, had had convulsions for two or three years, was reported by the mother that she had noticed that when he was restless at night that he moved the right leg a great deal more than his left, and that he always had done so. She could give no definite idea as to how he moved the leg.

In the case of a boy, aged nine, who had had convulsions at irregular intervals ever since his fourth year, his mother reported that, as a rule, he slept quietly, but she had twice noticed that he was restless on the right side. The character of the movements was not noticed.

A fifth case, aged forty, who had suffered from migrane for the greater part of her life, and who has had epilepsy for ten years, was observed by her sister who slept with her. She reported that, as a rule, she was a quiet sleeper, but that when she was restless it was on the right side.

Fourteen other epileptics were observed without result. Of these fourteen, eleven were sound sleepers, three were occasionally restless, but the restlessness did not show itself in any special manner or extremity.

In only one case have I had a patient operated on who had sleep movements. This was a girl, aged thirteen, who had had epilepsy for ten years. She was observed for three weeks by a trained nurse graduated from the Buffalo State Hospital for the Insane. She made a report from which I make a few abstracts.

Nov. 16th, 1.20 A.M.: Left arm was suddenly drawn up over the head and then fell down. This happened three times at intervals of eight or ten minutes. After a half hour there was a convulsion in which the body was drawn to the left side. The left arm was bent, with the fist resting on the shoulder.

Nov. 17th, 2 A.M.: Drawn to left side, arm drawn up as on previous night.

Nov. 18th: No convulsion, quiet all night.

Nov. 19th: Had no convulsion, but the left hand and arm were restless and moving about most of the time while asleep. Body quiet all night.

This last record shows best a case in which the sleep movement was definite and which corresponded with the character of the convulsion.

Nov. 20th, 1.35 A.M.: Had a spasm in which the left arm straightened out first, hand bent, then legs and right arm were contracted. No movements during sleep.

Other nights showed similar observations.

In January, this year, Dr. Park trephined over the arm centre on the right side. The dura was not adherent, the pia was œdematous. A layer of the cortex was removed.

Up to the present the operation has not proved of benefit, which is not surprising when we remember that the epileptic habit had been established ten years.

In attempting to interpret these sleep movements, I have carefully read the literature on epilepsy, but find no mention of any such observations.

Hughlings-Jackson assumed that there are three levels in the motor nervous system, which he calls the highest, the middle, and the lowest level. The highest, chiefly motor, is the frontal lobe. The middle level is composed of the portion which we understand as the motor region comprising the ascending frontal and parietal convolutions and the corpus striatum. The lowest level consists of the cornua of the cord, Clarke's column, and Stilling's nucleus. Starting with this theory, I venture the following explanation: When the patient is in profound sleep, all these levels are in a state of functional rest, and we have a quiet sleep undisturbed by movements, as no stimulus is transmitted to the muscles.

In a less profound sleep, one in which the patient is restless, I have assumed the highest level to be at rest and no longer exerting an inhibiting control over the middle level. This in a healthy person would show itself by general restlessness. In an epileptic, in whose motor region there is an irritated area of greater excitability than normal, it is assumed that it is less profoundly asleep than other areas. Hence in such conditions we may have pronounced and definite movements occurring during sleep and limited to the limb controlled by the irritated area. These movements may occur in only a few patients, and may occur in them only on occasions when slumber is disturbed.

Whether or not I am right in my interpretation, and whether it will be considered safe to localize a lesion from sleep movements alone, are questions which I very greatly desire to have answered.